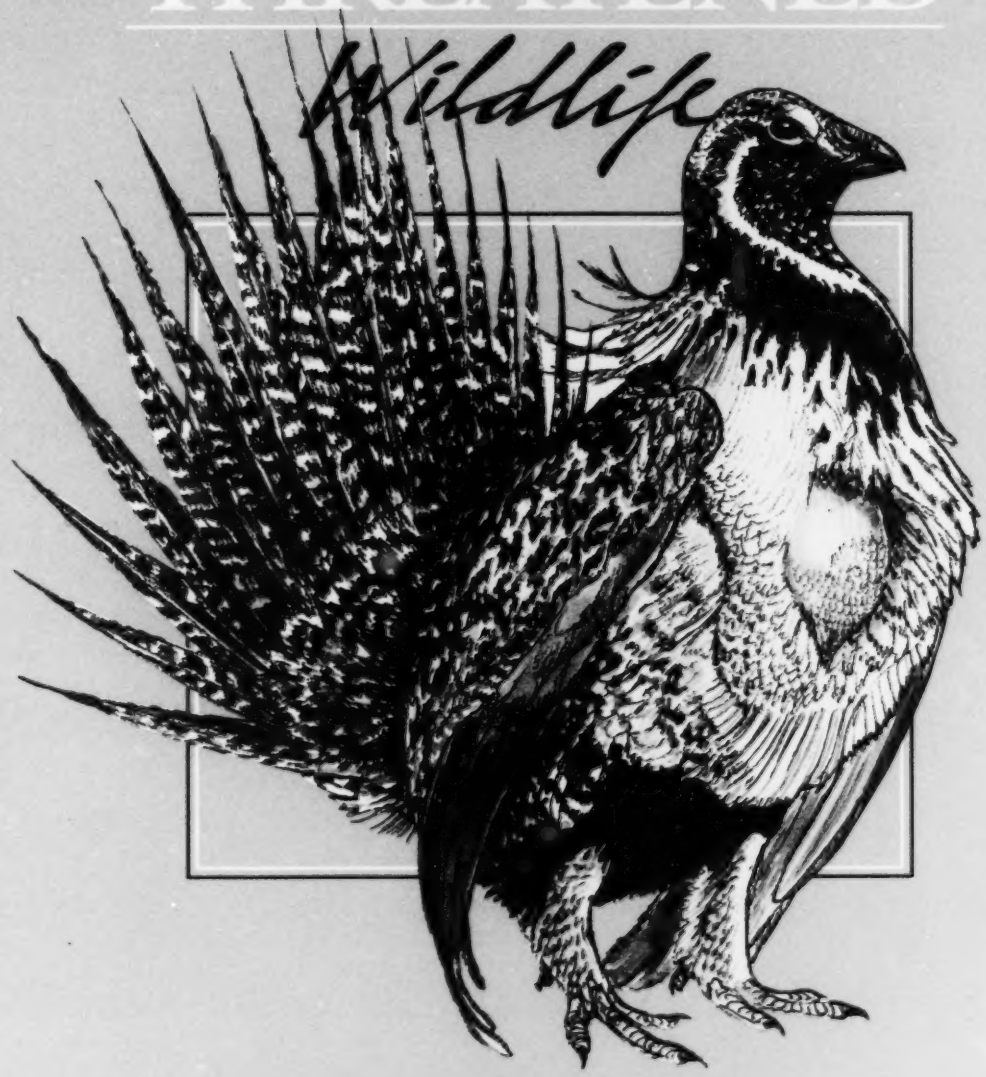
Prairie
THREATENED
Wildlife



Sage Grouse

This large grouse has declined dramatically in prairie Canada because of loss of its native sagebrush habitat

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SAGE GROUSE

Status

The Sage Grouse *(Centrocercus urophasianus)* is North America's largest grouse. It occurs almost exclusively where sagebrush grasslands are found in western Canada and the western United States. In Canada, it occurs in the southeast corner of Alberta and the southwest corner of Saskatchewan. Its fascinating courtship displays make it a favourite among wildlife enthusiasts. Current information suggests that long-term decline of Sage Grouse populations throughout its range is due to the disappearance of sagebrush habitat.

In North America, the Sage Grouse historically occurred in sagebrush prairie grasslands within British Columbia, Alberta, Saskatchewan and 16 states. Populations in British Columbia, Arizona, New Mexico, Kansas, Nebraska and Oklahoma have since disappeared. According to historical information, populations have declined since concentrated surveys began in Alberta in the late 1960s (surveys began in Saskatchewan in 1987). The current range of the Sage Grouse covers approximately 4000 km^2 in Alberta while anecdotal and historic data indicate that the species may have once occupied a range nearing 40000 km^2. Similarly, in Saskatchewan, the Sage Grouse once ranged over an area of about 60000 km^2; its present range covers an area of only 4300 km^2.

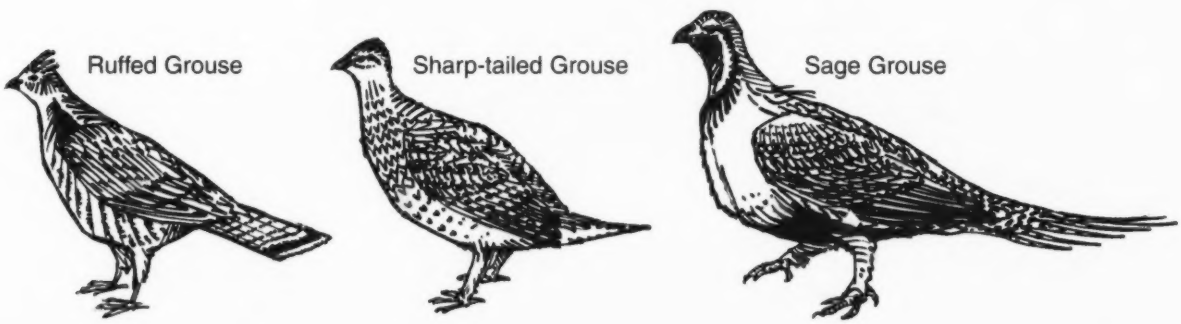
In the spring of 1968 Alberta's Sage Grouse population was estimated at 1839 to 2724 birds. As of spring 1999, the population in Alberta had fallen to between 350 and 520 individuals. Out of the original 31 strutting grounds (known as leks) found in 1968, only eight are still active. In Saskatchewan, the spring population was estimated at approximately 2500 birds at 44 leks in 1988. Eleven years later (spring 1999), the Sage Grouse population in Saskatchewan had dwindled to between 400 and 600 birds at only 12 active leks.

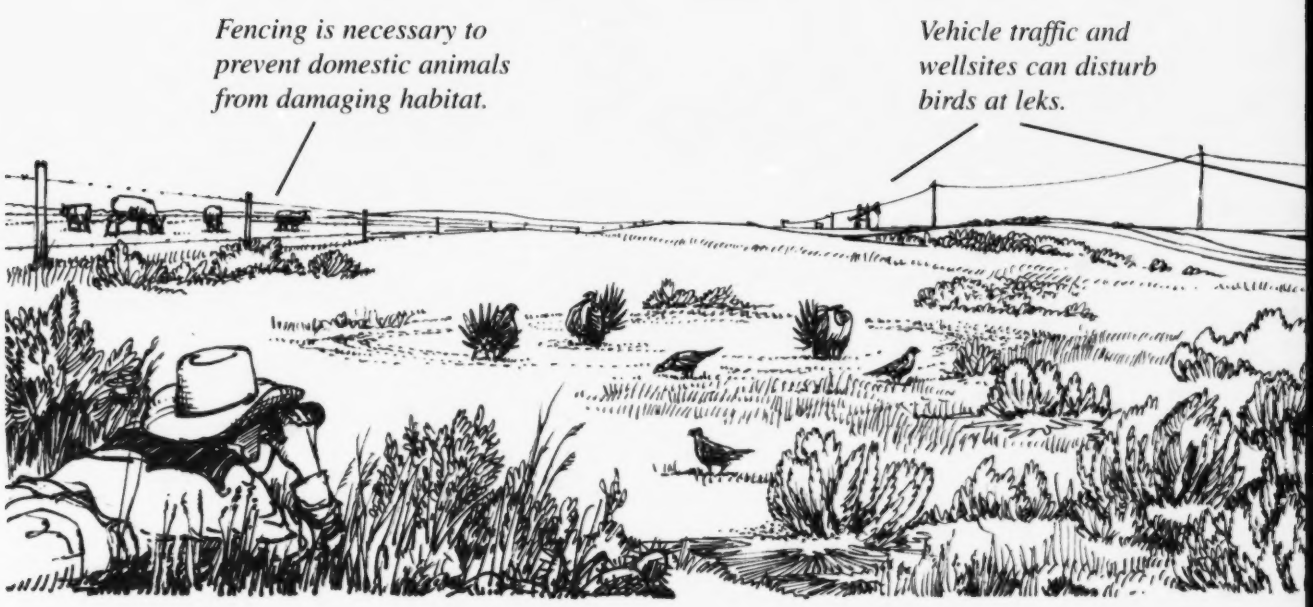
The Sage Grouse is listed as 'endangered' under the authority of Alberta's Wildlife Act, and is provided with full protection. In Saskatchewan, the Sage Grouse is listed as 'endangered' and protected under the Wild Species at Risk Regulations of the Wildlife Act. In the United States, the status of the Sage Grouse ranges from 'extirpated' (i.e., no longer occurs in an area) (New Mexico) to 'endangered' (Nebraska) to 'secure' (Montana, Idaho and Wyoming). In 1997, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated the Sage Grouse as 'threatened' in Canada. The following year the species was moved to the 'endangered' list. There is no federal ranking for the Sage Grouse in the United States, but it has been petitioned for 'endangered' or 'threatened' status.

Description

Male and female Sage Grouse are very different in appearance. Adult males can weigh approximately 3.1 kg and can be up to 74.8 cm in length whereas the much smaller females weigh approximately 1.7 kg and are 56.1 cm in length. Typically, the male has a gray crown and light black markings on the back of its neck. The face, throat and front of the neck have fine white markings. Above the eyes are yellow fleshy combs called lores, while behind the neck are long, fine black feathers or filoplumes. The upper breast is covered in white feathers. On each side of the male's throat is a large air (esophageal) sac. Each sac has a bare patch of greenish-yellow skin and is inflated during courtship displays. The back and wings are brown/gray while the lower breast and characteristic abdomen patch are black. Tail feathers are long and tapered with fine white, black and brown barring.

The female has more cryptic plumage than the male allowing her to blend into her environment In comparison to the male Sage Grouse, the body of the hen has considerably less white and is mottled with gray and brown shading. The tail feathers are not as




Fencing is necessary to prevent domestic animals from damaging habitat.
Vehicle traffic and wellsites can disturb birds at leks.

long, there are no air sacs on the sides of the throat, and the chin and throat are primarily grayish-white. Both juvenile males and females are virtually identical to the adult female, having only a little more gray and white in the black portion of the abdomen.

Habits and Reproduction

The courtship ritual of Sage Grouse begins in late March when the males begin congregating on strutting grounds to perform displays to attract females. Older males are the first to return, establishing their territories in the most central locations of the lek. Females attend these areas shortly thereafter. Younger or less dominant males are the last to appear (late April or mid May) and may claim territories in the outermost areas of the lek. Individual females are only present at the lek for a period of two to three days and usually mate with one of the more dominant males.

Male Sage Grouse gather on strutting grounds to perform magnificent displays. During these displays, the male performs a series of struts, fans his tail feathers, inflates the greenish-yellow esophageal sacs and fluffs out his white chest feathers. By flapping his wings, air is released from the sacs, which causes a unique plopping noise. While the leks are active, a male will display at dusk and at dawn (peak activity occurs around sunrise).

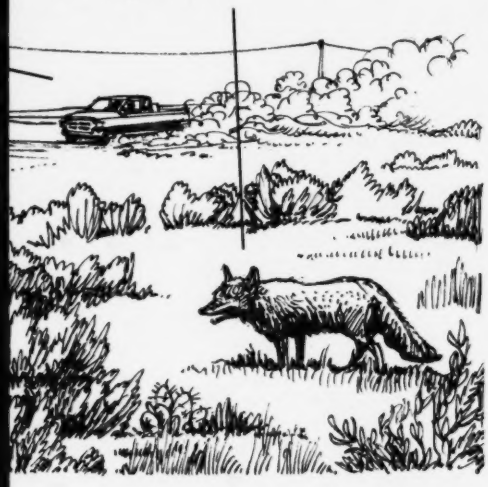
Strutting grounds can range anywhere from 0.04 ha (400 m^2) to 4 ha (40000 m^2) in size. Sage Grouse exhibit a strong tendency to return to the same strutting grounds every year; certain leks have been known to remain active for nearly 100 years. Leks are characteristically flat, open areas that lack vegetation but are surrounded by large sagebrush croppings. It is in these sagebrush 'outskirts' that the Sage Grouse feed and roost.

Females typically nest in shallow depressions, within 3 km of the lek, underneath a sagebrush plant. Generally, one egg is laid every day with an average clutch size between 7 and 9 eggs. The eggs vary in colour from a medium olive to a light green and are covered with small reddish to dark brown spots. The time interval from the laying of the first egg through to hatching is approximately 37 days.

In late summer and fall, all Sage Grouse congregate in flocks that are usually sexually exclusive (males with males, females with females). Movement to wintering grounds begins soon after. These movements can vary in distance and because of this, populations are considered either migratory or non-migratory. As a general rule, non-migratory populations do not move more than 10 km, while migratory populations may travel up to 160 km one-way. Most Sage Grouse migrations tend to move from higher elevations (spring and summer) to lower elevations (winter). Sage Grouse populations in Montana are considered non-migratory, with minimal movements occurring between overlapping summer and winter ranges. The southern portions of Alberta and Saskatchewan are similar to that of Montana, and therefore, Sage Grouse in Canada are assumed to be non-migratory as well

Open prairie offers little relief from winter conditions. To combat extremely cold temperatures and to increase overwinter survival, Sage

Generalist predators are becoming more abundant on the prairies.



Grouse tunnel into the snow, completely immersing themselves. Temperatures within an excavation can be up to 23ºC warmer than the air temperature.

Food

Sage Grouse lack the strong, muscular gizzards required to grind hard materials, such as seeds, and are therefore limited to eating soft vegetation, such as sagebrush leaves and buds. Aptly named, most of the Sage Grouse's year-round diet and 100% of its winter diet is comprised of sagebrush itself. Other minor components of its diet include insects and the buds and leaves of lush plants, such as dandelion and alfalfa. Hatchlings feed primarily on insects such as grasshoppers, beetles and ants because the protein from these insects promotes growth. As the young birds age, they begin to supplement their diet with lush green vegetation.

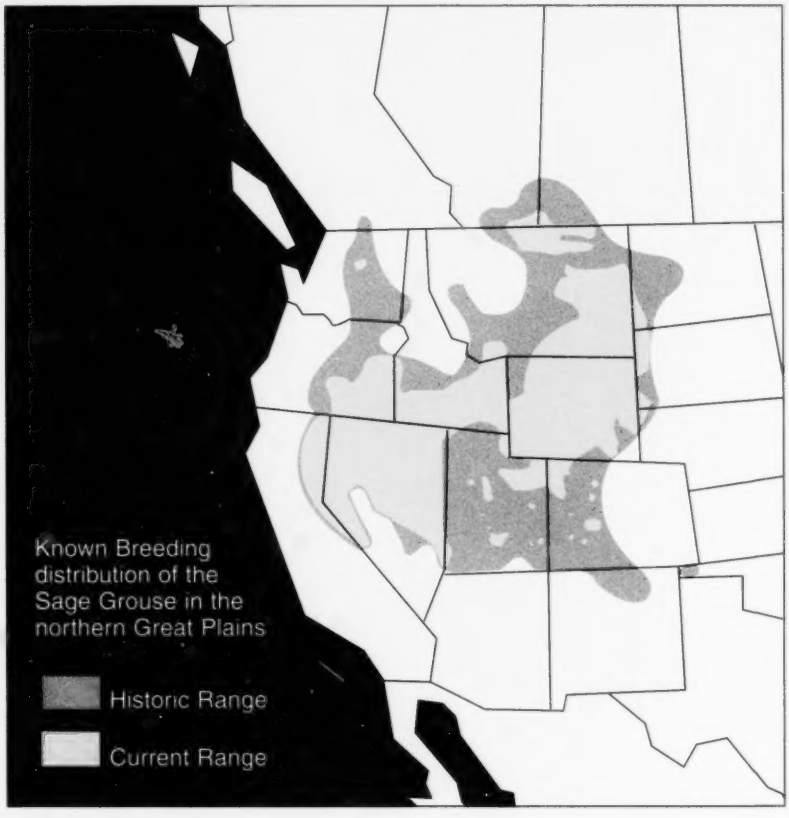
Limiting Factors

The loss of sagebrush habitat, stemming from a combination of agricultural activity and oil and gas exploration, is the primary cause of Sage Grouse population declines. An increase in demand for agricultural productivity since the turn of the century has resulted in the loss of an estimated 2.5 million ha of sagebrush habitat in North America between 1952 and 1977. Farming equipment has the potential to kill or injure birds while herbicides used to remove sagebrush reduce habitat quality and hinder Sage Grouse distribution. Overgrazing and trampling by cattle through poor management may reduce habitat quality and drive individuals from strutting grounds.

The loss of vegetative cover incurred by overgrazing can result in lower winter survival and increases the potential for predation on eggs, nestlings, young, or adults, which in turn, may lead to lower nesting success.

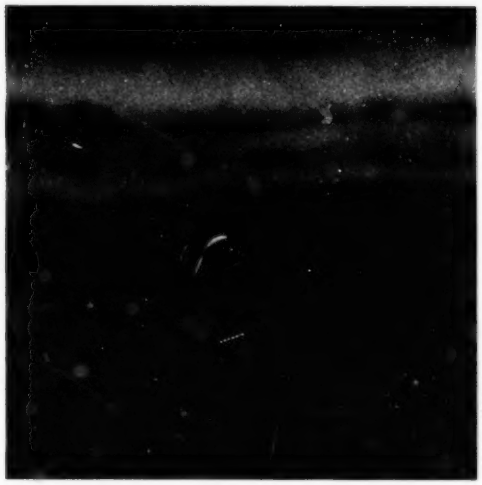
In Alberta and Saskatchewan, the oil and gas industry (both exploration and extraction) is very active in Sage Grouse habitat. The removal of habitat for the construction of well sites and access roads, although localized, results in the loss of available habitat and the fragmentation of remaining habitat into smaller, more isolated patches. The direct disturbance caused by both humans and machinery may also result in the abandonment of leks.

Roadways and traffic can fragment habitat and lead to direct mortalities

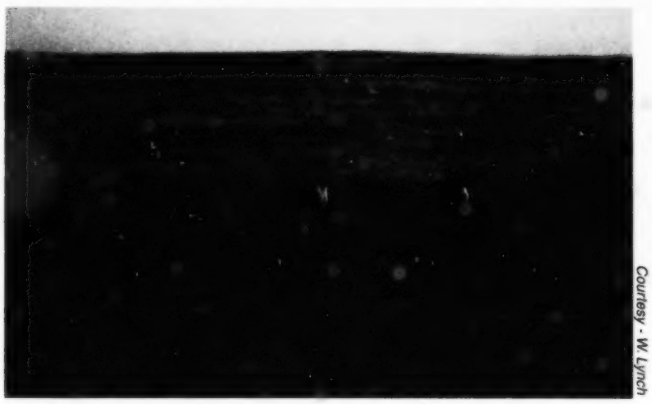


Courtesy - W. Lynch

A male Sage Grouse displays his esophageal sacs.

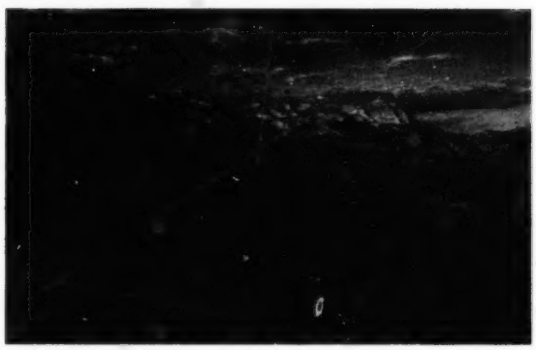


Courtesy - B. Gurr



Courtesy - W. Lynch

Male Sage Grouse strut in order to attract females at leks.



Courtesy - W. Lynch

Sage Grouse are typically found in sagebrush grasslands.

of Sage Grouse. Individuals travelling on the ground between breeding or foraging areas may be struck by vehicles. Sage Grouse have also formed leks on roads, which again can result in collisions with vehicles. Increased road access in the prairies may also attract nature enthusiasts to strutting grounds, resulting in further disturbance and lek abandonment.

Traditionally, unregulated hunting of the Sage Grouse, in the early1900s, was thought to be one of the factors that contributed to population declines although little reliable information is available. In Alberta and Saskatchewan, hunting of Sage Grouse was halted in 1930. However, Alberta reopened the season between 1967 to 1995. Since 1996, hunting has been prohibited in Alberta to help conserve Sage Grouse numbers. In the United States, restrictions have been placed on harvest levels and the number of hunters that actively seek out Sage Grouse has declined as well.

In Canada, climatic conditions at the most northern periphery of the range of the Sage Grouse may limit populations. Short summers and long, cold winters strain the survival ability of the birds by decreasing fat reserves and availability of food. Drought conditions reduce the amount of nesting cover and decrease the availability of herbaceous vegetation, which is especially important in the diet of young chicks. Drought during the 1980s and early 1990s, in Montana, limited Sage Grouse productivity; with the return of wetter conditions, populations have rebounded since 1997.

Sage Grouse are preyed upon by a variety of animals. Golden Eagles, Ferruginous Hawks, Great Horned Owls, bobcats, coyotes and foxes are the most common predators of adults while ground squirrels, ravens, skunks, raccoons and foxes prey on nests and young. However, the influence of predation on the number of Sage Grouse remains unknown. An increase of generalist predators, such as coyotes, foxes and raccoons, may have negative influences on Sage Grouse in areas where little vegetative

cover is available (overgrazed grasslands or burned areas).

Management and Outlook

Given the present condition of remaining sagebrush habitat and current population levels and trends, land management changes are crucial if Sage Grouse populations in Alberta and Saskatchewan are to survive. Fragmentation of the sagebrush grasslands is extensive. At many of the active leks in Canada, only two or three males have been observed, while most of the historical leks in the southern portions of Alberta and Saskatchewan have been abandoned altogether. Presently, the only viable population that exists in Alberta is restricted to the area around Manyberries. In Saskatchewan, Grasslands National Park provides the best opportunity for species survival.

Outside of Canada, various techniques have been employed to combat declining Sage Grouse numbers. Many attempts have been made to relocate large numbers of birds, but unfortunately, these have met with little success. An alternative strategy in Colorado attempted to create new strutting grounds by removing sagebrush between the original breeding grounds and the wintering area. To attract the birds, silhouettes and audio recordings of Sage Grouse were used. At first, the new area succeeded at attracting birds, but was later abandoned.

Captive breeding was also attempted. In Laramie, Wyoming, the Buttes Environmental Research Facility encountered mixed success breeding captive Sage Grouse. The difficulties involved in successfully rearing Sage Grouse in captivity suggest that, at least for the time being, it is an unreliable means of establishing viable populations.

A Sage Grouse Recovery Strategy for Alberta and Saskatchewan is currently being developed by the Canadian Sage Grouse Recovery Team. The recovery team, formed in 1998, is a large, multi-stakeholder team involving biologists, Alberta Environment and Saskatchewan Environment and Resource Management (SERM), universities, the oil and gas industry, the agricultural and ranching communities, land managers, conservation agencies and other interest groups associated with the Sage Grouse and its habitat. The purpose of this plan is to recommend measures that will allow for population recovery. Within this main objective there are several broad strategies including: increase productivity of Sage Grouse; increase annual survival; protect and manage Sage Grouse habitat; monitor population status; and develop and maintain public support. Detailed courses of action will be left to the Sage Grouse Recovery Action Plans, which will evolve from the recommendations in the Recovery Strategy.

The fight to keep the Sage Grouse in Canada is ongoing. Knowledge gained through research will provide additional tools to bring the Sage Grouse back from the brink.

Continuing research is allowing biologists to learn more of the Sage Grouse and its habitat. By placing radio-transmitters on individual birds, researchers may be able understand the exact reasons for the population decline and help to develop management strategies to aid in the recovery of the Sage Grouse in Canada.

Cooperation between researchers, industry and landowners is essential for Sage Grouse populations to remain viable in Canada. In addition to this team effort, increased public awareness and support of 'at risk' species, such as the Sage Grouse, will ensure the future of our prairie wilderness and wildlife.

For further information on Sage Grouse, contact your local wildlife agency or write to:

Alberta Environment
Fisheries and Wildlife Management Division
2nd Floor, Great West Life Building
9920 - 108 Street
Edmonton, Alberta, T5K 2M4

or

Saskatchewan Environment and Resource Management
Fish and Wildlife Branch
3211 Albert Street
Regina, Saskatchewan, S4S 5W6

Alberta Conservation Association

Saskatchewan Environment and Resource Management

Friends of the Environment Foundation

Alberta Sport, Recreation Parks & Wildlife Foundation

Alberta Environment

ISSN: 1180-0941

FEB '00